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Preface

Negotiations among nations are more likely to be successful in achieving mutually beneficial agreements when the parties demonstrate a degree of flexibility from their initial stance, when they show some willingness to compromise or yield in the direction of the other parties' positions. Intransigence often results in negotiation failure.

This study takes the findings of over 70 published bargaining experiments and compares them statistically to draw conclusions about the relative significance of eight variable categories that are hypothesized to influence the degree of negotiator flexibility. When the body of experimental literature is compared in this integrative fashion, some conclusions are revealed that challenge the assumptions and findings of individual studies.

This analysis contributes to the Processes of International Negotiation (PIN) Project Working Group on Negotiation Flexibility. It suggests constructive paths for future experimental research. Much of the analysis was conducted while the author was a Visiting Research Scholar at the PIN Project during the Summer 1992.

Abstract

Effects of eight variables on yielding behavior and time to resolution were evaluated by a meta-analysis of published bargaining experiments reported over a twenty-five year period. The strongest effect sizes were obtained for the variables of prenegotiation experience, negotiator's orientation, initial position distance, and time pressure. Weak effect sizes were shown for large versus small issues, representation, and visibility of the bargaining process. These results challenge the assertion made by Blake and Mouton (1989) that group representation is the most important determinant of competitive behavior in bargaining. Analyses of differences in procedures used in the strongest and weakest effect-size studies in each category suggest a number of conditions under which bargainers are likely to be intransigent. Comparison of the meta-analysis results with those obtained from a simulation where similar variables were combined in scenarios revealed stronger effect sizes for the combined variables both across and within stages of the simulation. Further analyses would elucidate effects of other independent and dependent variables as these are explored in future experimentation.

Determinants of Compromising Behavior in Negotiation: A Meta-Analysis

A large number of experimental studies on bargaining behavior have been reported since the early 1960s. Many of these studies explore relationships among variables hypothesized to influence a bargainer's willingness to make concessions or to yield from initial positions. Each of several situational variables has been analyzed in a number of studies making it possible to compare results. With the advent of meta-analytic statistical techniques, it is now possible also to compare results obtained for different independent variables construed as aspects of the bargaining situation. The purpose of this study is to assess the relative impacts of several variables, emphasized in this literature, on compromising behavior.

Recently, Blake and Mouton (1989) presented a compendium of results of experimental research on interpersonal and intergroup conflict. Based on these findings, they concluded that the critical lesson to be learned is that "(b)eing a member of a group exerts a vast influence, albeit a more or less silent one, on how individuals behave" (p. 139). This interpretation reinforces their earlier conclusion based on the results of experiments reported in the early 1960s (e.g., Blake and Mouton, 1961a, 1961b, 1961c, 1962). It is a single-factor explanation for the observed behavior of members representing their groups in competitive situations, namely, that their competitive, non-compromising behavior is due to loyalty to the group that they represent. However, the evidence can be interpreted in a different way. Rather than ascribing the findings to a single factor, it would seem that a number of situational variables, including group loyalty, contribute to the competitive behavior of

group representatives: Some of these variables were confounded with the representational variable in the Blake and Mouton studies, making it difficult to assert that representation per se accounts for the findings (see Druckman, 1967). Examples of possibly-confounded variables are the way that representatives prepare for a negotiation (Druckman, 1967,1968; Bass, 1966; Klimoski, 1972), the structure of the problem as all-or-none or distributive (Zechmeister and Druckman, 1973), the representative's attitudinal-orientation toward the negotiation (Druckman, 1967), and types of constituent communications to the representative during negotiations (Organ, 1971; Benton and Druckman, 1974). Each of these variables has been shown to have a significant effect on negotiating behavior. Other variables in the Blake and Mouton inventory shown to affect negotiating behavior, independent of group representation, are the visibility of the talks (Brown, 1970; Pruitt et al., 1986), the other's bargaining strategy (Yukl, 1974; Druckman and Bonoma, 1976; Gruder, 1971), the size of the conflict (Rappoport, 1969; Love et al., 1983), and time pressure (Carnevale and Lawler, 1986; Smith et al., 1982). These results would seem to argue against single-factor explanations for the observed negotiating behavior of group representatives. It is more likely that many aspects of the situation contribute to the behavior of interest, either as weighted or interacting components. Analyses reported to date do not elucidate the relative importance of these factors.

Missing from the Blake and Mouton review, and from many similar summaries of this literature (e.g., Pruitt, 1981; Druckman and Hopmann, 1989; Wall, 1992), is information about the number of studies in which these relationships were obtained, the strength of the relationships, and the way that the independent and dependent variables were defined from one study to another. The literature

that has accumulated on this topic consists mostly of experimental studies, uses statistical analysis to evaluate relationships, and can be categorized into clusters of similar independent and dependent variables. These characteristics permit a more systematic review and evaluation of impacts than has been done to date. In particular, recent advances in meta-analytic techniques, intended to integrate large numbers of experimental studies on a specialized topic, enable a reviewer to render a more precise evaluation of the strength of relationships obtained across a set of similar studies.

Despite its shortcomings, primarily with regard to interpretation of the findings, the Blake and Mouton review makes clear that the experimental research on this topic has grown considerably over the past twenty years. Most of these studies focus on determinants of compromising behavior defined operationally in terms of whether an agreement is reached, how far each negotiator moved from his or her initial positions, and how long it took to get an agreement. Within each type of independent variable, we now have several experiments. By dividing the literature into clusters of similar independent and dependent variables, it is possible to combine studies for overall effect sizes. By comparing the effect sizes by "cluster," it is possible to evaluate the relative impact of each variable on compromising behavior. For example, effects obtained from several experiments in which the group representation variable is manipulated would be compared to effects obtained in experiments where other aspects of the situation, also hypothesized to influence negotiating behavior, were manipulated. If, as Blake and Mouton claim, the group representation variable is particularly important, it should produce a larger -- or the "largest" -- average effect size than those produced for the other variables. This comparison can be made with meta-analytic techniques.

The purpose of this paper is to present the results of a meta-analysis of published experimental studies on compromising behavior in negotiation. Procedures and detailed information about the studies included in the analysis follows a more general discussion of the strengths and weaknesses of the technique. In addition to results about the rank-ordering of the variables in terms of effect size, an attempt is made to isolate the factors that distinguish between strong and weak effect sizes within each cluster of variables. The paper concludes with a discussion of implications for further research and methodological strategies.

Meta-Analysis: Strengths and Weaknesses

Early uses of meta-analysis are discussed by Glass et al. (1981). Their book was the first to give concrete suggestions for doing meta-analysis, using psychotherapy outcome research to illustrate various calculations and to explain how to interpret the findings. Following the publication of this book, many social scientists have used the technique to evaluate experimental findings on a number of topics. Examples include the Harris and Rosenthal (1985) evaluation of studies of expectancy effects, Feltz and Landers' (1983) analysis of mental practice effects, the Johnson and Johnson (1989) analysis of studies on cooperative learning, Freeberg and Rock's (1987) analysis of factors that influence the performance of work teams, and the very ambitious evaluation of randomized clinical trials in pregnancy and childbirth by Chalmers et al. (1989). These and many other applications provided the experience needed to refine the technique and develop the rationale for alternative procedures relevant to particular problems. Source books for applications include Light and Pillemer

(1984), Rosenthal (1984), Wolf (1986), and Cooper (1989). A more mathematically sophisticated treatment of meta-analysis is provided by Hedges and Olkin (1985). These sources discuss both the strengths and weaknesses of the approach.

Most generally, meta-analysis enables an investigator to combine the results from many studies designed to explore similar relationships between independent and dependent variables using a common metric to evaluate impacts. It also allows for direct comparison of the relative effects obtained on particular dependent variables from different independent variables. Meta-analysis is an operational approach to cumulation in science. The availability of procedures for judging effects over many studies encourages investigators to design studies that can serve as building blocks for a field or discipline. This has advantages both for theory-building and practice: By encouraging cumulation of evidence, meta-analysis provides strong falsification criteria for hypothesis-testing; it also insures that recommendations for practice are based on a body of documented evidence. The results of the analysis can also be used to construct models that link independent (e.g., time pressure), intervening (e.g., perceptions of the situation as cooperative or competitive), and dependent variables (e.g., a decision to reach a compromise agreement). [A good example of this kind of model construction is found in Freeberg and Rock's (1987) meta-analysis of the team-performance literature.] Another advantage of the approach derives from the requirement of quality control. Studies included in the analysis should be adequate in terms of methodological criteria, i.e., effects should not be due to uncontrolled sources of variation. Thus. a reviewer must examine research designs and analysis procedures, distinguishing between relatively "high-quality" and "low-quality" studies. Of course, all studies on a topic are not published and many articles may be overlooked. This being the

case, the studies included in the analysis may only represent a small set of the universe of possible experiments on a topic. Fortunately, techniques have been developed to correct statistically for the missing studies, referred to as the "file-drawer" problem (Rosenthal, 1984).

Although recent advances in meta-analysis have improved the technique, a number of weaknesses remain. One limitation is that effect sizes can only be computed for two-group comparisons; technically, for main-effect comparisons in which the numerator of the F-ratio is based on a single degree of freedom. Thus, important studies may be missed because three or more conditions were compared. Studies may also be missed because they do not report the appropriate statistics (t tests, F ratios, or chi-square) or these statistics cannot be computed from the raw data. Another weakness concerns the kinds of studies that are typically combined. Lacking precise replications, a reviewer is obliged to combine conceptually-similar, but not identical, definitions of independent and dependent variables. Included also in the computation of an average effect size are a mix of both high and low-quality research designs. Lacking in many of the experimental studies on negotiation is an exploration of dynamic relationships among variables. Changes in relationships over time within a negotiation and interactions among variables as they operate in different phases are not documented by the meta-analysis computations. Nor are those computations without some controversy. Statisticians are not in complete agreement about the most appropriate indicators of effect sizes. (See Wolf, 1986, for a discussion of alternative metrics.)

Despite these limitations, however, the experimental negotiation literature provides many studies that meet the criteria for inclusion. Many consist of two-group comparisons on the variables of interest. A number of studies within the

same independent-dependent variable category are near-replications, reducing the "apples-and-oranges" problem prevalent in other areas of research. And, most of the published experiments report appropriate statistics, making conversion to a correlation coefficient relatively easy. Moreover, the division of the literature matched our a priori categorization of key independent and dependent variables. Within each of these categorizes we uncovered at least four studies that manipulated the variable of interest; for some studies, several independent comparisons could be included in the analysis. While no strict upper-limit of studies per category was adhered to, we were guided by the "file-drawer" criterion: our search for additional experiments stopped when it became clear that including more studies would not change the size of the effect sufficiently to render a significant result non-significant or vice versa. Similarly, on the dependent-variable side, we dropped variables used in fewer than four studies. Our interest was in measures of compromising behavior indicated by moves made during the process, by outcomes, by perceptions, or by stated intentions. The most frequently used indicators were various forms of yielding -- concession-making, position change, willingness to compromise -- and the speed with which the parties obtain a resolution of their differences.

Studies Used in the Meta-Analysis

The studies were divided among eight independent-dependent variable categories. The categories can be described in terms of the particular types of conditions being compared. Experiments on group representation consisted of a comparison of two types of negotiators, one representing a group to which he or she is accountable, the other representing only oneself. Prenegotiation

experience consists of comparisons made between preparing strategies, usually with members of one's group, and studying the issues either with one's own or members of another group. By negotiator's orientation, we refer to the difference between generally competitive or cooperative views of the negotiating situation. Studies that manipulate visibility consist of comparisons between a condition where the negotiation process is observed by teammates or other onlookers and a condition in which the talks are private. The experiments that examine different opponent bargaining strategies focus usually on the difference between relatively tough (few concessions) and soft (many concessions) postures. Two variations of issue size consisted of differences in initial position distance, often on a scale consisting of alternative compromise positions, and differences in the importance of the issues, construed in terms of implications for various constituencies or in terms of the magnitude of incentives. Time pressure was manipulated in several experiments by comparing either deadlines with no deadlines or costs (vs. no costs) imposed for time spent negotiating. Impacts of each of these variables were assessed on various indices of yielding or compromising behavior. For several variables, impacts on time to resolution were also analyzed. A complete listing of studies in each independent-dependent variable category is shown in Table 1.

Table 1 (p.42)

The sample of studies used in the analysis can be characterized in terms of several features. Practically all were published in refereed journals, assuring a certain degree of quality control: Only three appeared as either book chapters (Brandstatter et al., 1983; Druckman et al., 1977) or in a convention

proceedings (Benton, 1972). The earliest study appeared in 1966 (Bass) while the most recent was published in 1991 (Druckman and Broome). Several studies explored the effects of more than one variable of interest (e.g., Organ, 1971; Love et al., 1983), thus appearing in more than one category, and a few reappear as independent comparisons of several experimental conditions or as more than one experiment reported in the same paper (e.g., Bass, 1966; Druckman, 1968). Most experiments were laboratory simulations of real-world bargaining problems reduced in size, scale, and time frame. Typically, an experiment proceeds in stages from an opening background briefing followed by a prenegotiation session consisting of learning and preparing for the upcoming talks, the negotiating process (including both debate and concession-making), and post-negotiation reactions including a debriefing; total time is usually no more than two hours. These similarities in paradigm (research design, procedures and format) from one study to the next facilitate comparison and interpretation of results from the meta-analysis.

Each study used in the analysis reported appropriate statistics -- F ratios, t-tests, or chi-square -- for use in the meta-analysis. The reported statistic was transformed to a correlation coefficient according to formulae provided by Wolf (1986; see Table 8). Effect sizes for the separate studies in an independent-dependent variable category were averaged and a standard deviation was calculated for the set of correlations. The range of effect sizes for each category is also shown. Another combined statistical test is based on the conversion of probabilities associated with F or t ratios to z scores. The combined standard normal deviates (Z) and their associated probability levels were obtained by the Stouffer method of adding Zs (Rosenthal, 1984; Wolf, 1986), using the following formula:

$$Z_c = \Sigma z/\sqrt{N} ,$$

where Z_c is the standard normal deviate for the combined studies, Σz is the standard normal deviate for individual studies, and N is the number of studies. As noted above, however, these tests of the strength of the relationships are based only on the experiments included in the analysis. They do not take account of studies that do not meet the criteria for meta-analysis or are not reported. The effect of missing studies is gauged by using the fail-safe N formula given by Wolf as follows:

$$N_{fs.01} = (\Sigma Z/2.33)^2 - N ,$$

where ΣZ is the sum of individual Z scores and N is the number of studies combined for the computation of an effect size. The result of this computation is interpreted as the number of additional studies in a meta-analysis needed to reverse the overall probability obtained from a combined test to a value higher than, in this case, the .01 level for statistical significance.

Results

This section is divided into three parts. Effect sizes (ES) and related statistics for the studies in each independent-dependent variable (IV-DV) category are reported in the first part. The second part consists of a discussion of procedural differences between the strongest and weakest ES experiments in each category. These are variables that may account for the

different findings. A comparison of results obtained from a simulation in which several variables are combined in scenarios with the meta-analysis results is discussed in the third part of this section. These are two approaches to synthesis. The simulation combines effects of several variables operating simultaneously in a situation. The meta-analysis combines results from several experiments that analyze the effects of one variable at a time.

Effect Sizes

All of the studies used in the analysis are summarized in Table 1. They are grouped under IV-DV category where information about authors, dates, and Journal are recorded. Relevant information used for calculating an effect size is also shown. This includes the experimental conditions being compared, the statistical ratio that evaluates the comparison, its associated degrees of freedom, and the conversion of these statistics to an ES expressed as a correlation coefficient. Several items in this table require explanation. Negative statistical ratios and effect sizes indicate that the result was in the opposite direction predicted by the hypothesis being tested, for example, non-representatives were more competitive than representatives. A number of studies reported more than one effect size for a particular comparison. In these experiments, the investigators developed several indicators of the dependent variable, for example, perceptual, process, and outcomes indicators of yielding from initial positions. For these studies, an average ES was calculated and used in the meta-analysis. As was noted above, some papers appear several times within an IV-DV category; this is because several independent experiments were reported in the paper or independent comparisons of alternative conditions were made. The condition comparisons are described only in general terms. For more

details on procedures, the reader is advised to consult the article.

Average effect sizes are shown in Table 2 for the impacts of each independent variable on measures of yielding. Also included in the table are the variation and range of ES for the studies in the category, tests of significance and associated probability levels, and the results of the fail-safe N computation. The same types of information are shown in Table 3 for the measure of time to resolution. Effect sizes for yielding range from a high of .39 (prenegotiation experience, negotiator's orientation) to a low of .13 (large vs. small issues). Effect sizes for the measure of time to resolution range from .43 (time pressure) to .26 (representation). A general distinction can be made between relatively strong and weak independent variables. Only small differences occurred among the ES of prenegotiation experience, orientation, position distance, time pressure, and opponent's strategy. Similarly, small differences appear among the weaker variables -- visibility, representation, and large vs. small issues. Representation is also relatively weak in relation to the impact of the other variables on time to resolution[1]. The relatively small effect size on yielding for the representation variable may be due, in part, to a negative ES obtained in the study by Ben-Yoav and Pruitt (1984b; see Table 1). The impact of this study on the overall ES is shown in Table 2. Numbers in parenthesis are the recomputed statistics, excluding the Ben-Yoav and Pruitt ES. The recalculated ES increases from .24 to .30, which changes the rank order of this variable one position -- from seventh to sixth. Similarly, excluding the negative ES on time to resolution obtained from the Hermann and Kogan study (1968; see Table 1) increases the average ES from .26 to .31 but does not change the rank order of the representation variable. And, when the negative ES obtained in the Rozelle and Druckman study (1971b; see Table 1) is dropped from the

analysis of large vs. small issues, the average ES increases from .13 to .20 but the rank order of the variable remains the same.

Tables 2 and 3 (pp.53-54)

The significance tests and fail safe N computations indicate that the obtained ES for most variables are quite strong. Despite the small number of studies in some categories, a large number of additional studies would be needed to reverse the overall probability obtained from the combined tests of significance: Over 50 additional studies would be needed for the variables of prenegotiation experience, orientation, and position distance. Only the variable of large vs. small issues produces a non-significant ES, a relationship that can be reversed by including additional studies.

The magnitudes of these ES can be understood in relation to ES obtained in meta- analyses conducted in other areas of research. Two earlier meta-analyses are on topics similar to research on negotiation, namely, team performance and goal structures in learning groups. Freeberg and Rock's (1987) analysis of determinants of several indicators of team performance produced effect sizes of .36 (accuracy), .35 (solution time), .40 (product quality), and .25 (task proficiency). The Johnson et al. (1981) analysis of the effects of different goal structures on achievement resulted in an average ES of .41 with the ES for the various experimental comparisons (among competitive, cooperative, and individualistic goal structures) ranging from a high of .78 to a low of 0. The meta-analyses conducted by Harris and Rosenthal (1985) on expectancy effects produced ES that ranged from .11 to .29 on various behavior categories, from -.44 to .48 on mediating variables, and from .07 to .35 on factors related to

outcomes. Somewhat further removed from negotiating behavior are the analyses conducted by Feltz and Landers (1983) on mental-practice effects and by Jacobs et al. (1990) on flight simulator training research. The former analysis showed an average ES of .48 for the effects of mental practice (without physical practice) on performance; the combined mental-physical practice condition raised the average ES to .62, although the McCullagh et al. (1990) study reported an ES of .42 for a combination of Sybervision (a type of mental practice) and physical practice. The latter analysis reported an overall average ES of .26. The average ES obtained in this study are stronger than those obtained in the team performance, expectancy effect, and flight simulator training analyses but somewhat weaker than those obtained for the effects of mental practice and cooperative learning.

Differences Between Strong and Weak Effect Size Studies

The experiments that produced the largest and smallest ES for each IV category are shown in Table 4. By comparing the procedures used in these studies, it may be possible to ascertain the aspects of those procedures that account for the different results. These variables, then, are the basis for anothoer generation of experiments on the situational determinants of bargaining behavior. The key procedural differences are summarized by IV-DV category.

Table 4 (p.55)

Yielding by representatives. The strongest ES were obtained in the studies by Druckman et al. (1972) and Hermann and Kogan (1968). Yoav and Pruitt's (1984)

finding of more competitive non-representatives resulted in a negative ES while the Druckman (1967) study produced a non-significant difference between a representation and non-representation condition. Several differences in procedure existed between the two types of studies. The representative's teammates were present during the bargaining in the Druckman et al. (1972) experiments but not in Druckman (1967) or in Yoav and Pruitt (1984). The hierarchical relationship between delegates and leaders in the Hermann and Kogan study combined with an option that provided a "solution" to the delegate's boundary-role dilemma (to reach an agreement without compromising "too much") to produce a relatively strong ES. These conditions did not exist in the studies that produced weaker ES. In the Druckman study the representatives were not accountable to "superiors;" in the Yoav and Pruitt study, representatives bargained under a cooperative orientation leading them to yield in order to attain settlements. Thus, representatives may be less willing to compromise when their **teammates** are present during the bargaining, when there is a **hierarchical** relationship between the delegate and his or her "superiors," when there is no **salient solution** that allows the to resolve their boundary-role dilemma, and when one's orientation toward the bargaining task is **competitive**.

Time to resolution by representatives. Whereas the Hermann and Kogan (1968) manipulation produced a strong ES on yielding, the same condition comparison resulted in a weak ES on the time measure. Both delegates and leaders needed about the same amount of time to resolve their differences. However, more variation was obtained for the delegate than for the leader groups: delegates had either short or long negotiations while leaders fell in the middle of the time distribution. Delegates who took longer were those who were less satisfied

with their leaders, less committed to their internal decisions, and less satisfied with the resulting intergroup decisions. Differences among representatives are highlighted by this finding. Especially interesting is the role played by the **relationship** between delegates and leaders; an unsatisfactory relationship may prolong negotiations even when the same compromises are reached as outcomes for both short and long negotiations.

Yielding due to prenegotiation experience. Contrasting ES were found for the Druckman (1968) study, on the one hand, and for the Druckman (1967) and Bass (1966) studies on the other. The primary difference between Druckman's studies is the way that the unilateral strategy condition was created. The 1967 study was more ambiguous about the specific means by which strategies were to be prepared; the 1968 study was more precise in communicating how formal positions were to be prepared. Three dimensions of difference were found between the Bass and 1968 Druckman studies. Bass used more issues (9 versus 4), did not employ a deadline, and noted a suspicion that some unilateral study groups were actually developing strategies. Each of these aspects of the situation may have reduced the size of the impact of strategizing versus studying the issues by reducing the salience of the manipulation. More issues increase the **complexity** of the task; preparation may interact with **time pressure** due to study-condition subjects yielding more under deadlines, and a lack of clarity in the instructions about **how to prepare** -- in both the Bass and 1967 Druckman studies -- may increase the variation among groups in the same condition.

Time to resolution due to prenegotiation experience. Contrasting ES were obtained by the Bass (1966) and Klimoski (1972) experiments. Study-condition

subjects took as long to reach agreement as did strategy-condition subjects in Klimoski's study. A difference between strategy and study groups, found in other studies (e.g., Druckman, 1968) is that strategy groups tend to be more cohesive than study groups. Klimoski's manipulation may have induced comparable levels of cohesiveness in both conditions. A cohesive study group may indeed take as long to complete negotiations as a cohesive strategy group.

Yielding by negotiator's orientation. The strong ES obtained in Organ's (1971) study is contrasted to the weak ES found in Druckman's (1967) study. This may be accounted for by three differences in procedures. While Organ induced an orientation through direct communications from teammates to representatives just before the negotiation, Druckman selected subjects on the basis of self-reported orientations assessed sometime before the negotiation. In Organ's study, but not in Druckmans', the orientation (either cooperative or competitive) was linked to a negotiating strategy. And, in Organ's study, the preferred orientation was communicated to negotiators from constituents located "above" the negotiators in the simulated organizational structure. The relationship between negotiators and teammates in Druckman's study was not hierarchical.

Yielding under visibility or constituent surveillance. Face-saving pressures were instituted in the Brown (1970) and Druckman and Rozelle (1975) studies. In both studies, subjects compromised less when "performing" before an audience of constituents than when no audience was present during negotiations. For Brown, the pressures were strong -- they were asked to describe embarrassing feelings before an audience -- and material costs were levied for deviation from instructions. Druckman and Rozelle's procedure

consisted of having subjects defend a counter-attitudinal position before an audience. Material costs associated with performance were not at stake and commitment to positions being defended was relatively low.

Yielding by opponent's strategy. The key difference between the Gruder (1971) and Brandstatter et al. (1983) experiments was the clarity of the other's strategy.. Gruder's subjects attributed cooperative or exploitative intentions to their opponents based on the actual moves made during bargaining. Subjects in the Brandstatter et al. study reacted to a liked or disliked opponent that they "regarded" as being either soft or tough bargainers. This indirect manipulation of the other's strategy may have been the reason for the small ES obtained in that study.

Yielding by initial position distance. Contrasting ES were obtained for the two Rappoport studies. The key difference between them was the way that positions were created. Subjects in his 1965 study acquired positions through laboratory training, construed as either large or small "cue-discrepancies." Those in the 1969 study brought their positions (previously assessed by attitude scales) on particular social issues to the laboratory. This difference between the studies on subjects' commitment to their positions may have accounted for the large ES in the 1969 study and the small ES in the 1965 study. Similarly, the small ES obtained in Druckman and Rozelle's 1975 study can be understood in terms of position commitment. Subjects in that study were asked to defend a counter-attitudinal position in both conditions, one in which initial differences were relatively large and the other where the distance between positions was small.

Yielding and time to resolution on large vs. small issues. For both measures, contrasting ES were obtained for the Druckman et al. (1988) and Love et al. (1983) experiments. In the former study, positions were either linked explicitly to broad ideologies (large issues) or were not so linked (small issues). In the latter study, large or small issues were created by conditions in which factions within teams were either unified or split on the ideological issues. The **role of ideology** was defined differently in the two experiments: For Druckman et al., the comparison was between explicit or implicit differences in underlying ideologies; for Love and her associates, the comparison was made between competing teams that had relatively extreme or moderate ideological differences. The impact of this variable was stronger for an ideology vs. "no ideology" comparison than for a comparison of larger vs. smaller differences in ideological issues. Both of these studies were role-playing simulations of social conflicts. The negative ES obtained in the Rozelle and Druckman (1971) experiment raises questions about the effects of role-playing procedures on negotiating behavior. They found more yielding from initial positions on a central (large) issue than on a peripheral (small) issue in a non-role-playing condition; the opposite finding was obtained for their role-playing condition (see the ES in Table 1). Further probes of this issue may be illuminating[2].

Yielding under time pressure. The range of ES for time pressure is relatively small. The strongest ES of .54, obtained by Smith et al. (1982), is contrasted to the weakest ES of .27 found in both the Yukl et al. (1976) and Hamner (1974) studies. Subjects in the different studies may have responded in similar ways to the presence or absence of time pressure: They yielded more (less) when pressured (not pressured) to reach an agreement. Yet, despite the

apparent similarities in response, there are some differences among the studies worth noting. The short time limits (45 vs. 90 seconds) used by Smith and his associates may have combined with payoffs based on earnings to produce strong effects on willingness to compromise. All subjects in the Yukl et al. study negotiated for a period of 30 minutes and were told that they would not be competing directly against their opponent for a monetary reward. (In the high time pressure condition, subjects lost "additional points" given them before bargaining, one for each minute spent bargaining.) Similarly, Hamner compared a 20-trial limit (low pressure) with a 30-trial limit (high pressure). However, like Smith et al., Hamner paid subjects according to their earnings.

Time to resolution under time pressure. Time pressure exerts its strongest effects on time to resolution. All studies reviewed found quicker agreements when subjects bargained under a deadline (see Table 1). The somewhat smaller ES obtained in the Komorita and Barnes (1969) study may have been due to the arbitrary assignment of a score for non-agreers, namely 13 for a 12-trial deadline. This artificial ceiling may have reduced the between-condition variation in time to agreement. It may have also suppressed the mean number of trials to agreement for subjects in the low-pressure condition[3].

The procedural differences described above are additional variables hypothesized to affect compromising behavior. They may interact with the variables examined in the meta-analysis in producing effects. For example, representation effects are stronger when the relationship between the representative and his or her constituents is hierarchical (a two-way interaction between the variables). It is also stronger when the representatives approach negotiation with a competitive orientation (three way interaction between

representation, type of relationship, and orientation). These are hypothesized interaction effects to be investigated in further experiments.

Combining Variables in a Simulation: Relative Impacts

The meta-analysis is limited to comparing effects of variables taken one at a time. Effect sizes are computed from main effects obtained in experiments that manipulate a small number of variables, usually two or three. Of interest is the question of whether larger ES would be obtained from experiments that examine the impact of these variables in combination, not as interactions but as main effects from the combined impact of several situational variables operating simultaneously. Combined impacts were analyzed in a recent study, making it possible to compare the obtained ES with those from the meta-analysis. Details on procedures and results are presented in Druckman (1993). Only procedures relevant to the comparisons of interest are summarized here.

Participants played roles of "delegates" to a simulated conference in which they would negotiate over establishing an international commission to regulate standards about industrial emissions. The conference was divided into four stages, each defined by a scenario in which several variables were embedded. Six of the eight variables analyzed in the meta-analysis were included in the stage scenarios; an additional ten variables, not analyzed in the meta-analysis, were also included. Three experimental conditions were compared: one designed to induce compromise from initial positions (condition A), another designed to prevent compromise (condition B), and a third in which few compromises would be made in the early stages with more compromises in a final endgame stage (condition C). In the first stage, for example, (referred to as prenegotiation planning), delegates were told that their positions were either not linked

(condition A) or linked (conditions B and C) to national ideologies, that they were either an advisor to the delegation (A) or the primary representative (B and C), that they were either to study the issues (A) or strategize (B and C), and that they were familiar (A) or unfamiliar (B and C) with the positions developed by the other delegations. In the final endgame stage, there was either a deadline (conditions A and C) or no deadline (B), there was light (A and C) or heavy (B) media coverage, the delegate had either an attractive (A and C) or unattractive (B) alternative to a negotiated agreement, and there was either a proposed mediator-derived solution (A and C) or no such solution (B). Condition differences on measures of compromise were analyzed across and within stages; a 3 (conditions) x 4 (stages) ANOVA design with stages as a repeated measure. The experiment was replicated with two samples, scientists with knowledge of the issues and diplomats with experience in international negotiation. The F-ratios computed on each dependent variable were converted to ES for comparison with the results of the meta-analysis, both across and within stages.

Effect sizes for the condition A and B comparisons on yielding and time to resolution are shown in Table 5 for each sample and for both samples combined. An average ES from the meta-analysis, calculated for the 70 comparisons (across the variables) made on yielding and the 26 comparisons made on time to resolution, is also shown in the table. A third dependent variable shown in the table is perceptions of the situation as being competitive (win-lose) or cooperative (problem-solving). However, since only a few earlier studies included this variable, it was not analyzed in the meta-analysis. A combined-sample ES on yielding of .59 compares to an average ES of .31 from the meta-analysis; a difference of .28 between the simulation and meta-analysis results. These are two types of main effects. One combines several variables within a

condition; the other combines many studies, each analyzing the effects of the variables taken one at a time. The impacts on compromising behavior are considerably stronger for the former combination procedure than for the latter.

Table 5 (p.57)

Effect sizes are compared for the scientist sample in the simulation and meta-analysis by stage in Table 6. The average ES calculated by stage for the meta-analysis comparisons include only those variables contained within the stage scenarios: For example, representation, prenegotiation experience, and large vs. small issues for stage I; time pressure and visibility for stage IV. Impacts of the combined variables on yielding in the simulation are stronger than the combined results of the studies used in the meta-analysis; differences by stage of .12, .12, .28, and .21 respectively. The differences are especially large for the later stages III (the give-and-take) and IV (the endgame) of the simulation.

Table 6 (p.58)

A more direct comparison of simulation and meta-analysis results entails isolating the separate effects of the variables included in each stage of the simulation. An attempt was made to do this by asking participants to make pair comparisons among the variables included in each stage. Analysis of these judgments resulted in weights for the variables being compared. (See Guilford, 1954, for a description of the technique; see Druckman, 1993, for the results.) Four variables examined in the meta-analysis proved important in the judgments

of simulation participants regarding what made them more or less flexible. Whether media coverage was wide or limited was judged as being particularly important in decisions made during the later stages. This variable is similar to the manipulation of visibility in the experiments reviewed above; visibility produced a modest ES of .28 in the meta-analysis. While being a delegate-advisor induced compromise in the simulation, being the primary representative was not judged as being an important determinant of decisions. Representation effects produced a relatively weak ES in the meta-analysis. Strategy preparation was judged to reduce compromises in the simulation just as studying the issues had some, more modest, influence on inducing movement. Prenegotiation experience produced the strongest ES in the meta-analysis. And, simulation participants reacted to tough opponents with flexibility in contrast to the relatively inflexible decisions made by them in reaction to softer opponents; the opponent's strategy variable produced a moderate ES in the meta-analysis. The other variables included in both analyses -- large or small issues and time pressure -- were judged as being relatively weak influences on decisions to compromise in the simulation. Similarly, large or small issues produced a very weak ES on yielding in the meta-analysis. Time pressure, on the other hand, had stronger effects in the meta-analysis on both yielding and time to resolution.

Discussion

The results have implications for theoretical work on compromising behavior in negotiation. They address, in particular, the relative effects of various aspects of the negotiating situation on the willingness to move from initial positions to achieve agreements. These aspects are those shown in earlier

experiments to influence bargaining behavior. The findings contribute to the literature in several ways, addressing "old" issues and paving the way for new research. By combining findings from different experiments, the meta-analysis could distinguish relatively important from unimportant variables as they operated across studies. Such cumulation enabled us to address the argument that inflexibility in bargaining is due largely to pressures on group representatives to adopt tough postures. While the analysis was limited to main effects, it was possible to suggest possible interactions from comparisons between strong and weak ES studies within a variable category. However, the effect sizes obtained for these experiments were shown to underestimate the size of effects likely to obtain when the variables operate together as may well be the case in a variety of real-world settings. Each of these findings is discussed in turn followed by suggestions for next steps.

The results address the issue of single-factor explanations for bargaining behavior. They challenge Blake and Mouton's (1989) assertion that group representation is the most important determinant of competitive behavior during bargaining. In fact, the average ES for this variable was considerably weaker than those obtained for the other variables in the analysis. Other aspects of the situation, unrelated to a bargainer's role, had stronger impacts on compromising behavior. However, the results also suggest that "role effects" can be enhanced by highlighting certain aspects of the role or by combining it with other features of the situation. One aspect is the relationship between the bargaining representative and the parties being represented: A hierarchical relationship decreases a representative's willingness to compromise. Two parts of the relationship between a representative and his or her constituents are decision latitude and accountability. Hierarchical relationships are

characterized by reduced latitude and high accountability. Other features of the situation shown to enhance representation effects are the presence of teammates during bargaining, the lack of a salient solution to the bargaining problem, and a competitive orientation toward the bargaining task. These are variables that interact with role in producing effects on bargaining behavior. Two of these variables are among those included in this analysis, namely, visibility and orientation.

A number of other possible interactions are suggested by the comparisons between experiments that produced strong and weak ES in each category. For all the variables examined, stronger effects were obtained in studies that defined the contrasting experimental conditions clearly, highlighting the key dimensions of difference between the conditions. Examples are studies where a clear distinction was made between the representative and non-representative roles, where the unilateral study condition did not allow for some strategy planning, where an opponent's actual offers defined his or her strategy (rather than scripted information), and where neither an artificial ceiling of trials nor long time limits were used to define time pressures. For many of the variables, stronger effects were obtained when other conditions were present. Following strategy preparation, bargainers were considerably more competitive when there were fewer issues in contention, deadline pressures, and they were part of cohesive teams. Competitive bargaining orientations were enhanced when they were communicated (or induced) during the bargaining process by bureaucratic "superiors." The orientations also had a stronger impact on behavior when they were linked directly to negotiating strategies. When face-saving concerns were aroused by visible negotiations, bargainers were more competitive. They were also more competitive when their initial positions were derived from long-held

social or political attitudes and when those positions had implications for broader ideologies. And, time pressure was more likely to induce compromise when actual payoffs to bargainers depended on earnings in a competitively-defined task.

These results provide answers to the question, when do bargainers stick to their positions? Seven answers are offered as follows:

1) When they are **representatives** accountable to bureaucratic actors at "higher" levels who communicate a competitive approach during the talks at which they or other constituents are present;

2) when they prepare **strategies** in cohesive groups for a negotiation in which few issues are being contested and a deadline exists;

3) when relatively **competitive** orientations are induced during the bargaining by bureaucratic "superiors" and linked explicitly to bargaining strategies;

4) when they perform before an **audience** that creates face-saving pressures;

5) when the **differences between positions** are derived from long-held social attitudes and/or are linked to contrasting ideologies made explicit in the negotiating materials;

6) when there are no (or weak) **time limits** to reach agreement and no "**strike costs**" while the bargaining takes place, and

7) when they are faced with a **tough or exploitative opponent** and his or her "toughness" is easy to discern.

These are the conditions for intransigence. They are the aspects of a situation

that can be manipulated as part of a tactical approach to negotiating beneficial agreements. As such, the factors can also be used as a checklist for diagnosing particular cases in terms of the likelihood that an agreement will occur. Whether the expected effects on bargaining result from each variable taken singly or from particular combinations of these variables remains to be studied.

The comparisons made between strong and weak ES studies call attention to the several ways in which variables may combine to produce effects on bargaining behavior. One consists of "procedural enhancements" to the key independent variables. Examples are specifying hierarchical relationships between bargaining representatives and their constituents or agencies. inducing face-saving pressures as part of the visibility manipulation, enhancing commitment to the positions taken by opposing bargainers, and insuring that the other's bargaining strategy is easy to discern. These effects result from the way a variable is operationalized in a particular study. Another type of combinination consists of interactions between different variables. Examples are the effects of competitive orientations or the existence of salient solutions on a representative's behavior, of the way that time pressure or number of issues influences the impact of strategy preparation, and the effects of orientation in hierarchical versus non-hierarchical situations. A third type of combined effect is when the IV-DV relationship is mediated by a third variable. Examples of such intervening variables are the bargaining-team cohesion produced by prenegotiation strategy preparation or by making the contrasting ideological orientations underlying bargaining positions explicit. Another example is when cooperative or competitive orientations toward the bargaining task are linked to a strategy that leads to agreements or deadlocks. Each of these combined effects remains to be demonstrated. Less conjectural are the relative impacts

on bargaining of combining variables versus examining them one at a time.

The comparisons made between the meta-analysis and simulation results are instructive. Not surprisingly, perhaps, the differences were quite substantial, showing that combined effects are stronger than effects obtained from each variable manipulated separately. Comparable differences were obtained across and within the stages of the simulated negotiation (see Tables 5 and 6). These differences may also reflect the distinction between laboratory bargaining and real-world negotiations. Effects obtained in controlled laboratory experiments may underestimate impacts of similar variables that influence negotiating decisions made in situ. Less is known, however, about the way that these variables interact in producing effects.

Further information is provided by comparing the weights produced for those variables represented in both analyses. Similar results were obtained for both the strongest and weakest variables in the meta-analysis. Prenegotiation preparation had strong effects in both analyses: it yielded the strongest ES in the meta-analysis and was among the strongest variables judged to influence decisions about flexibility in the simulation. Representation and issue size produced relatively weak effects in both analyses; however, while the role of representative produced negligible effects in the simulation, the contrasting role of delegate-adviser was judged to influence flexibility in the simulation. Such convergent findings attest, in part, to the generality of the findings for these variables. Less general, however, are the effects produced by other variables examined in both analyses. While media exposure was a stronger influence in the simulation than visibility was in the experiments, time pressure had a stronger impact in the experiments than in the simulation. These differences may be due to context. Open versus secret deliberations has long

been regarded an important influence on the behavior of international negotiators. For them. "...the same compromises arrived at secretly may not look nearly as bad as if arrived at openly... neither party expects concessions in formal public conferences..." (Druckman, 1973: 45). Visibility for laboratory bargainers would seem to have fewer implications for their outcomes. Time pressure, on the other hand, may be more compelling in laboratory tasks where short-term payoffs rather than long-term relationships and side effects are at issue.

The sampling of bargaining experiments included in the meta-analysis makes apparent the cumulative feature of research on this topic. New experimental results can be added within each category as they become available. The new results may lead to adjusted average effect sizes. They are unlikely, however, to overturn the significance levels obtained with the current samples as indicated by the fail-safe N computations. New categories of variables can also be added. A number of variables are central in theorizing about negotiation but have received scant attention in the experimental work to date. These include the influence of power differences among the parties (Beriker, 1992), the roles played by third parties (Zubek et al., 1992), issues of relationship between the parties (Azar and Burton, 1986), the impact of the number of parties or the complexity of the issues (Druckman and Hopmann, 1989; Winham, 1977), the difference between having attractive or unattractive alternatives to a negotiated agreement (Fisher and Ury, 1981; Thibaut, 1968), and the role played by conference format and agendas, including the issue of simultaneous versus sequential consideration of the issues (Pruitt, 1981; Cohen et al., 1978)[4]. Further experiments designed to explore effects of these and related variables would expand the meta-analytic menu, resulting in an increased number of ES

comparisons. On the dependent variable side, investigators should be encouraged to include a greater variety of perceptual indices in their measurement package. Guided by a checklist of DVs to include in any study, investigators would contribute data that enable meta-analysts to construct path models that highlight the roles played by intervening perceptions. (See Freeberg and Rock's, 1987, examples of "mini-models.")

Finally, other distinctions among the studies can be used as bases for comparison. One distinction is between those studies characterized by strong as opposed to weak experimental designs: Is there a difference in ES between the strong and weak studies within each IV category? Another is the difference among settings as laboratory, simulation, or field studies: Are the stronger ES found for the more tightly-controlled laboratory studies? And, a third distinction is between the earlier and more-recent investigations: Are stronger effects produced in the newer generation of experiments? These and other dimensions for comparison call attention to the impacts of methodology on results. These comparisons would be facilitated by a larger sampling of studies within each independent-dependent variable category.

FOOTNOTES

Author's Note: Much of the work on this analysis was done while I was a visiting Research Scholar with the Processes of International Negotiation Project (PIN) at the International Institute for Applied Systems Analysis, Laxenburg, Austria. Gratitude is extended to Bert Spector, Leader of the PIN project, for facilitating this work. Special thanks go to Xianghong Wang for her contributions to the analyses of strong and weak effect-size experiments and to James Druckman for his assistance in performing the statistical computations required for the meta-analysis.

1. Tests of significance based on the z-statistic are not diagnostic of differences between means due to the small number of studies in each category.

2. The negative ES obtained in this study accounts, in large part, for the small overall ES shown for the large vs. small issue variable. This is due to the relatively small number of studies that investigated the effects of this variable (see Tables 2 and 3).

3. Another difference between the procedures used in the two studies (Hamner; Komorita and Barnes) was the information about the other's costs was known by Komorita and Barnes' subjects but not by the subject in Hamner's study. It is, however, unclear how this procedural difference relates to the effects of time pressure.

4. Several of these variables were included in the simulation scenarios: relative power of the parties, mediation, attractiveness of alternatives, conference format, and agenda decisions about seeking comprehensive or partial agreements. Experimental evidence is beginning to accumulate on the effects of power differences and mediation.

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Table 1
Characteristics of Studies Used in the Meta-Analysis

IV-DV Category	Authors	Date	Journal[1]	Conditions Compared	Statistics	Degrees of Freedom[2]	Effect Size[3]
Group Representation--Time to Resolution	Druckman	1967	JPSP	Represent a simulated organization versus self-representation	F = .098	112	.03
	Hermann and Kogan	1968	JCR	Leaders (non-representatives) versus delegates (representatives)	t = -.41	18	-.10
	Benton	1972	American Psychological Association (APA) proceedings	Representative is accountable or non-accountable to constituents	F = 3.64	140	.29
	Druckman, Solomon, and Zechmeister	1972a	Sociometry	Representing a laboratory team versus oneself	F = 6.67	15	.56

[1] JPSP = Journal of Personality and Social Psychology
JCR = Journal of Conflict Resolution
JESP = Journal of Experimental Social Psychology

[2] For the F ratios, the degrees of freedom for the denominator are given.

[3] The several statistical ratios shown for some studies were due to alternative indicators (DV's) of yielding or time to resolution. An average effect size was calculated and used as the effect size for the study.

	Druckman, Solomon, and Zechmeister	1972b	Sociometry	Representing a laboratory team versus oneself	F = 4.86	20	.44
	Klimoski	1972	Organization Behavior and Human Performanc	Constituency evaluation versus no constituency evaluation of performance	F = 4.68	184	.16
	Benton and Druckman	1973	International Journal of Group Tensions	Accountable to a teammate versus not accountable	F = 4.90	44	.32
	Zechmeister and Druckman	1973	JCR	Representing assigned positions from team versus own position	F = 10.95	80	.35
Group Representation--Yielding	Druckman	1967	JPSP	Represent simulated organization versus self-representation	F = .259	112	.05
	Hermann and Kogan	1968	JCR	Leaders (non-representatives) versus delegates (representatives)	t = 1.81	18	.39
	Gruder	1971	JCR	Accountable versus non-accountable bargainers	F = 5.30 X = 11.21	88 1 (N = 96)	.24 .34
	Rozelle and Druckman	1971	Psychonomic Science	Represent a laboratory team versus oneself	F = 5.72	48	.33
	Vidmar	1971	JPSP	Negotiation (representation) versus discussion (non-representation) groups	F = 7.12	80	.29
	Benton	1972	APA proceedings	Representative is accountable or not accountable to constituents	F = 2.95	40	.26
	Druckman, Solomon, and Zechmeister	1972a	Sociometry	Representing a laboratory team versus oneself	F = 5.72	15	.53

	Druckman, Solomon, and Zechmeister	1972b	Sociometry	Representing a laboratory team versus oneself	F = 3.63	20	.39
	Benton and Druckman	1973	International Journal of Group Tensions	Accountable to a teammate versus not accountable	F = 5.10 F = 5.60	92 44	.23 .34
	Zechmeister and Druckman	1973	JCR	Representing assigned positions from team versus own position	F = 7.07	80	.29
	Druckman and Rozelle	1975	Social Behavior and Personality	Represent laboratory group versus oneself	F = 1.02	180	.08
	Ben-Yoav and Pruitt	1984a	Organizational Behavior and Human Performance	Accountable bargainers versus non-accountable bargainers (no expected future interactions)	t = 2.17 t = 3.26 t = 2.14	36 36 36	.34 .48 .34
	Ben-Yoav and Pruitt	1984b	Organizational Behavior and Human Performance	Accountable bargainers versus non-accountable bargainers (expect positive future interactions)	t = -4.71 t = -1.97	36 36	-.62 -.31
Group Representation--Relative Competitiveness	Hermann and Kogan	1968	JCR	Leaders (non-representatives) versus delegates (representatives)	F = 5.00	44	.32
	Benton	1972	APA proceedings	Representative is accountable or not accountable to constituents	F = 2.95	40	.26
	Druckman, Solomon, and Zechmeister	1972	Sociometry	Representing a laboratory team versus oneself	F = 6.27 F = 4.41	15 37	.54 .33
	Benton and Druckman	1973	International Journal of Group Tensions	Accountable to a teammate versus not accountable	t = 2.91	18	.56

Prenegotiation Experience--Time to Resolution	Bass	1966 (experiment I)	Psychological Monographs	Strategize versus study the issues	t = 5.05	32	.67
	Bass	1966 (experiment II)	Psychological Monographs	Strategize versus study the issues	F = 3.36 F = 2.59	44 44	.27 .24
	Bass	1966 (experiment III)	Psychological Monographs	Strategize versus study the issues (with a deadline)	F = 1.25	32	.19
	Bass	1966 (experiment IIIa)	Psychological Monographs	Strategize versus study in group or alone	F = 2.90	32	.29
	Druckman	1967	JPSP	Strategize versus study the issues with own group	F = 10.54	112	.29
	Druckman	1968a	JESP	Position formation versus unilateral discussion	t = 2.19	22	.42
	Druckman	1968b	JESP	Position formation versus bilateral study	t = 2.58	22	.48
	Druckman	1968c	JESP	No prenegotiation discussion versus unilateral discussion	t = 1.86	22	.31
	Druckman	1968d	JESP	No prenegotiation discussion versus bilateral study	t = 2.13	22	.41
	Klimoski	1972	Organizational Behavior and Human Performance	Position adoption within teams versus general discussion without formulating strategies	F = .45	184	.05
Prenegotiation Experience--Yielding	Bass	1966	Psychological Monographs	Strategize versus unilateral study (no deadline)	F = 3.61 (union) F = .14 (company)	44 44	.28 .06
	Druckman	1967	JPSP	Strategize versus bilateral study	F = 4.86 F = 3.93	112 112	.20 .18
	Druckman	1968a	JESP	Position formation versus unilateral discussion	t = 2.53	22	.48

	Druckman	1968b	JESP	Position formation versus bilateral study	t = 2.59	22	.48
	Druckman	1968c	JESP	No prenegotiation discussion versus unilateral discussion	t = 2.05 t = 1.94	22 22	.40 .38
	Druckman	1968d	JESP	No prenegotiation discussion versus bilateral study	t = 2.13 t = 2.24	22 22	.41 .43
	Conrath	1970	JCR	Prior experience in which cooperation was rewarded versus no prior experience	X = 12.27	1 (N = 58)	.46
	Klimoski	1972	Organizational Behavior and Human Performance	Strategize versus unilateral study	F = 5.64	184	.17
	Korper, Druckman, and Broome	1986	Journal of Social Psychology	No prenegotiation discussion versus unilateral study (facilitation)	t = 1.59	13	.40
	Druckman, Broome, and Korper	1988	JCR	No prenegotiation discussion versus unilateral study (facilitation)	t = 1.88	16	.43
	Druckman and Broome	1991 (experiment I)	JCR	Prenegotiation familiarity with opponent versus no familiarity	F = 9.74 F = 4.10	50 50	.40 .28
	Druckman and Broome	1991 (experiment II)	JCR	High or low familiarity in prenegotiation session	t = 2.20 t = 3.04 t = 1.40	17 17 17	.47 .60 .32
Negotiator's Orientation--Yielding	Druckman	1967	JPSP	Prebargaining orientation as "win-lose" or problem-solving	F = 5.34 F = 4.46	112 112	.21 .20
	Summers	1968	JCR	Persuasive versus cooperative instructions	F = 7.39 F = 5.92	32 32	.43 .40
	Organ	1971	Sociometry	Constituent norms as competitive or cooperative stance	F = 65.8	87	.66

	Frey and Adams	1972	JESP	Exploitative vesus cooperative perceptions of opponent	F = 20.38 F = 7.47 F = .83 F = 4.94	72 72 72 72	.47 .31 .11 .25
	Druckman, Solomon, and Zechmeister	1972	Sociometry	Communication set as "justifiers" versus "persuaders"	F = 24.21 F = 17.52	31 31	.66 .60
	Benton and Druckman	1974	Journal of Applied Social Psychology	Constituent's orientation as competitive or cooperative	F = 5.34	75	.26
	Wall	1975	JPSP	Representative's bargaining orientation as persuasive or cooperative	F = 9.30 F = 6.10 F = 2.20 F = 5.13	26 26 26 26	.51 .44 .28 .41
	Lindskold et al.	1983	JCR	"Cooperators" versus "competitors"	X = 4.48 F = 4.61 F = 10.80	1 (N = 87) 75 75	.23 .24 .35
	Carnevale and Lawler	1986	JCR	"Individualistic" versus "cooperative" orientations	F = 8.41 F = 13.38 F = 3.48 F = 5.68 F = 6.90 F = 4.10 F = 10.10	40 40 40 40 40 40 40	.42 .50 .28 .35 .38 .31 .45
Visibility of Negotiation--Yielding	Brown	1970	JESP	An evaluative versus a non-evaluative audience	F = 10.33 F = 4.82	40 40	.45 .33
	Organ	1972	Sociometry	Watched or not watched by constituents	F = 6.90	87	.27
	Druckman and Rozelle	1975	Social Behavior and Personality	Team members observe the debate and give feedback on performance versus debate in privacy	F = 4.73 F = 6.32	180 167	.16 .19
	Carnevale, Pruitt, and Seilheimer	1981	JPSP	With or without teammates' visual access to negotiation	F = 4.34 F = 4.70 F = 7.19	60 60 60	.26 .27 .29

	Pruitt, Carnevale, Forcey, and Van Slyck	1986	JESP	Constituent surveillance of negotiation	F = 6.67 F = 5.94	72 72	.29 .28
Opponent's Bargaining Strategy--Yielding	Gruder	1971	JCR	Opponent as expolitative or fair	F = 35.75	88	.54
	Druckman, Zachmeistar, and Solomon	1972	Behavioral Science	Opponent becomes increasingly tough or soft	F= 10.80	60	.39
	Hamner	1974	JPSP	Soft and fair versus tough opponent	F = 4.51 F = 2.73	87 87	.22 .17
	Yukl	1974 (experiment I)	JPSP	Other's concession magnitude as large or small	F = 8.31 F = 11.77 F = 7.42	54 54 54	.37 .42 .35
	Yukl	1974 (experiment II)	JPSP	Other's concession frequency as frequent or infrequent	F = 7.78 F = 14.72	32 32	.44 .56
	Druckman and Bonoma	1976	Behavioral Science	Opponent's concession rate as increasinly tough or increasingly soft	F = 2.33	48	.22
	Brandstatter, Kette, and Sageder	1983	chapter in Tietz	Tough or soft opponent	F = 3.42	326	.10
	Johnson	1971	J. of Counseling Psychology	Opponent proposes compromises from initial positions or does not propose compromises	F = 11.24	120	.29
Conflict Size as Initial Position Distance--Yielding	Thibaut and Faucheux	1965a	JESP	Size of conflict as a narrow or wide range of points to be distributed	F = 12.24	49	.51
	Thibaut and Faucheux	1965b	JESP	Size of conflict as attractiveness of external alternative (BATNA)	X = 7.20	1 (N =48)	.39

	Rappoport	1965	JESP	Small versus large cue discrepancies in a cognitive conflict task	F = .86	36	.15
	Hammond et al.	1966	JESP	Small versus large cue discrepancies in a cognitive conflict task	F = 9.23	32	.47
	Summers	1968	JCR	Differences on one (simple) or two cues (complex) in a cognitive conflict task	F = 4.31 F = 5.32	32 32	.35 .38
	Rappoport	1969	JCR	Large or small differences on social issues "debated" in a cognitive conflict task	F = 18.55 F = 11.94 F = 5.10	8 8 8	.84 .77 .62
	Deutsch, Canavan, and Rubin	1971	JESP	Size of conflict defined by length of one-way road in the trucking game	F = 5.44 F = 9.65	84 84	.25 .32
	Rozelle and Druckman	1971	Psychonomic Science	Distance between initial positions	F = 5.09	175	.17
	Zechmeister and Druckman	1973	JCR	Outcome options as "all-or-none" or "distributive"	F = 15.59 F = 5.80 F = 24.38	80 80 80	.40 .26 .48
	Druckman and Rozelle	1975	Social Behavior and Personality	Extreme or moderate differences in initial positions	F = 1.78	180	.10
	Love, Rozelle, and Druckman	1983	Social Behavior and Personality	Many versus few common interests	F = 6.22 F = 6.12 F = 5.91 F = 5.60	40 40 40 40	.37 .36 .36 .35
	Druckman	1986	JCR	Relation between size of difference in "toughness" and impasse frequency	r = .45		.45
Conflict Size as Large or Small Issues--Time to Resolution	Zechmeister and Druckman	1973 (experiment I)	JCR	Ideological differences explicit or not	F = 2.79	80	.18

	Zechmeister and Druckman	1973 (experiment II)	JCR	Ideological differences made explicit or not for subjects taking "extrema" positions on the issues	F = 6.30	23	.46
	Druckman, Rozelle, and Zechmeistar	1977	chapter in Druckman	Contesting either differences in ideology or interests	F = 12.12	14	.68
	Love, Rozelle, and Druckman	1983	Social Behavior and Personality	Cohesive or split factions of group on ideological position	F = .35	40	.09
Conflict Size as Large or Small Issues--Yielding	Druckman	1970	Psychonomic Science	Difference along ideological or non-ideological lines	t = 1.61 t = 1.93 t = 1.29 t = 2.09	83 83 83 83	.17 .21 .14 .22
	Rozelle and Druckman	1971a	Psychonomic Science	Debating central or peripheral issues (deception condition)	F = -3.84	37	-.30
	Rozelle and Druckman	1971b	Psychonomic Science	Debating central or peripheral issues (role-playing condition)	F = 2.89	48	.27
	Zechmeister and Druckman	1973	JCR	Ideological differences made explicit or not	F = 1.77 F = 2.84	80 80	.15 .19
	Druckman and Rozelle	1975	Social Behavior and Personality	Debating central or peripheral issues	F = 1.57	167	.10
	Love, Rozelle, and Druckman	1983	Social Behavior and Personality	Cohesive versus split factions of group on ideological positions	F = .12	40	.06
	Druckman, Broome, and Korper	1988	JCR	Ideological differences make explicit or not	t = 1.84	18	.40
Time Pressure--Time to Resolution	Komorita and Barnes	1969	JPSP	$2 cost imposed per trial versus no trial costs imposed (ceiling of 12 trials)	F = 7.47 F = 1.13	36 36	.42 .17

	Hamner	1974	JPSP	20 trials and 5% penalty for each additional trial (high pressure) versus 30 trials and no penalty (low pressure)	F = 61.93	87	.65
	Yukl, Malone, Hayslip, and Pamin	1976	Sociometry	Points lost for each minute taken to reach agreement versus no points lost	F = 15.40 F = 3.90	54 54	.47 .26
	Smith, Pruitt, and Carnevale	1982	JPSP	45 seconds versus 90 seconds to complete negotiation	F = 8.27	46	.39
Time Pressure--Yielding	Komorita and Barnes	1969	JPSP	$2 cost imposed per trial versus no trial costs imposed (ceiling of 12 trials)	F = 4.95 F = 2.82 F = 4.42 F = 2.18	36 36 36 36	.35 .27 .33 .24
	Pruitt and Drews	1969	JESP	Acute versus mild time pressure defined by the chance that the negotiation would end early (few offers) or late (many offers)	F = 19.11 F = 19.42 F = 16.80	76 76 76	.45 .45 .43
	Hamner	1974	JPSP	20 trials and 5% penalty for each additional trial (high pressure) versus 30 trials and no penalty (low pressure)	F = .129 F = 28.43	87 87	.04 .50
	Yukl, Malone, Hayslip, and Pamin	1976	Sociometry	Points lost for each minute taken to reach agreement versus no points lost	F = 4.13	54	.27
	Smith, Pruitt, and Carnevale	1982	JPSP	45 seconds versus 90 seconds to complete negotiations	F = 44.60 F = 17.40 F = 6.40	42 42 42	.72 .54 .36

	Carnevale and Lawler	1986	JCR	A very brief amount of time to negotiate--5 minutes plus reminded about time remaining every minute--(high pressure) versus a very large amount of time to negotiate--25 minutes plus reminded about time remaining every 5 minutes--(low pressure)	F = 6.56 F = 3.03 F = 2.86 F = 6.14 F = 4.10 F = 6.22 F = 4.65	40 40 40 40 40 40 40	.38 .27 .26 .37 .31 .37 .32

Table 2
Average Effect Sizes, Significance Levels, and Fail-Safe Ns for Variables on Compromising Behavior

Variable	No. Studies	Effect Size	Variation	Range of Effect Sizes	Z[1]	p	Fail-Safe N[2]
Prenegotiation Experience	12	.39	.11	.48 - .17	6.003	<.0000001	68
Negotiator's Orientation	9	.39	.15	.66 - .21	6.723	<.0000001	52
Initial Position Distance	11	.37	.18	.74 - .10	6.919	<.0000001	86
Time Pressure	6	.36	.11	.54 - .27	4.061	<.0000245	13
Opponent's Strategy	8	.33	.15	.54 - .10	6.481	<.0000001	54
Visibility\ Surveillance	5	.28	.07	.39 - .18	4.682	<.0000014	16
Representation\ Accountability	13 (12)	.24 (.30)	.25 (.13)	.53 - -.46 (53 - .05)	4.792 (5.549)	<.0000009 (<.0000001)	42 (57)
Large vs. Small Issues	7 (6)	.13 (.20)	.15 (.12)	.40 - -.30 (.40 - .06)	1.498 (2.285)	<.0668072 (<.0110107)	0 (0)

[1]Calculated by the Stouffer method of adding z's (see formula above)

[2] Based on the unweighted sample size and at the .01 significance level

Table 3
Average Effect Sizes, Significance Levels, and Fail-Safe Ns for Variables on Time to Resolution

Variables	No. Studies	Effect Size	Variation	Range of Effect Sizes	Z[1]	p	Fail-Safe N[2]
Time Pressure	4	.43	.16	.65 - .30	4.97	<.0000004	15
Large vs. Small Issues	4	.35	.27	.68 - .09	3.028	<.00123	3
Prenegotiation Experience	10	.34	.13	.67 - .05	4.889	<.0000007	34
Representation\ Accountability	8 (7)	.26 (.31)	.22 (.17)	.56 - -.10 (.56 - .03)	4.424 (4.731)	<.000003 (<.000001)	21 (22)

[1]Calculated by the Stouffer method of adding z's (see formula above)

[2] Based on the unweighted sample size and at the .01 significance level

Table 4

Strongest and Weakest Effect Size Studies in Each Category

IV-DV Category	Strongest ES	Weakest ES
Yielding by Representatives	Druckman et al. (1972) .53 (I), .39 (II)	Yoav and Pruitt (1984) -.46
	Hermann and Kogan (1968) .39	Druckman (1967) .05
Time to Resolution by Representatives	Druckman et al. (1972) .56	Hermann and Kogan (1968) -.10
		Druckman (1967) .03
Yielding by Prenegotiation Experience	Druckman (1968) .48 (I), .48 (II)	Bass (1966) .17
		Druckman (1967) .17
Time to Resolution by Prenegotiation Experience	Bass (1963) .67	Klimoski (1972) .05
Yielding by Negotiator's Orientation	Organ (1971) .66	Druckman (1967) .21
Yielding by Visibility	Brown (1970) .39	Druckman and Rozelle (1975) .18

Yielding by Opponent's Strategy	Gruder (1971) .54	Brandstatter et al. (1983) .10
Yielding by Initial Position Distance	Rappoport (1969) .74	Rappoport (1965) .15 Druckman and Rozelle (1975) .10
Yielding on Large or Small Issues	Druckman et al. (1988) .40	Love et al. (1983) .06 Rozelle and Druckman (1971) -.30
Time to Resolution on Large or Small Issues	Druckman et al. (1988) .68	Love et al. (1983) .09
Yielding under Time Pressure	Smith et al. (1982) .54	Yukl et al. (1976) .27 Hamner (1974) .27
Time to Resolution under Time Pressure	Hamner (1974) .65	Komorita and Barnes (1969) .30

Table 5

Meta-Analysis vs. Simulation Results

Overall Effect Sizes

Variable	Scientists (A vs B) (N = 28)	Diplomats (N = 17)	Combined Samples (N = 45)	Meta-Analyses	Difference
Compromise/ Yielding	.52	.66	.59	.31 (based on 70 comparisons)	.28
Time to Settlement of Percent Agreements	.48	.58	.53	.35 (based on 26 comparisons)	.18
Perceptions as win-lose contest or problem-solving debate	.43	.46	.45		

Table 6

META-ANALYSIS vs. SIMULATION RESULTS BY STAGE

Effect Sizes by Stage of Negotiation[1]

Stage	Simulation[2] (N = 28)	Meta-Analyses[3]	Difference in Effect Sizes
Prenegotiation Preparation	.37	.25 (based on 32 comparisons)	.12
Setting the Stage	.43	.31 (based on 25 comparisons)	.12
Give-and-Take	.59	.31 (based on 12 comparisons)	.28
The Endgame	.53	.32 (based on 12 comparisons)	.21

[1]Effect sizes computed only for variables included in each stage of the simulation.

[2]Effect sizes are the average for the effects of the resistance point and desired outcome indices.

[3]Effect sizes are the average of effects for yielding measures on only those variables included in each stage of the simulation.